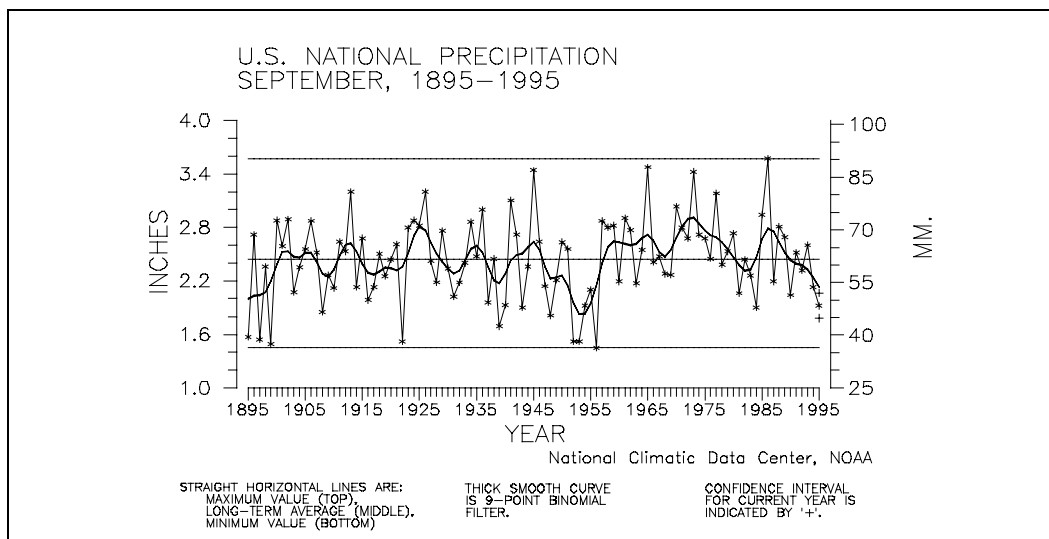
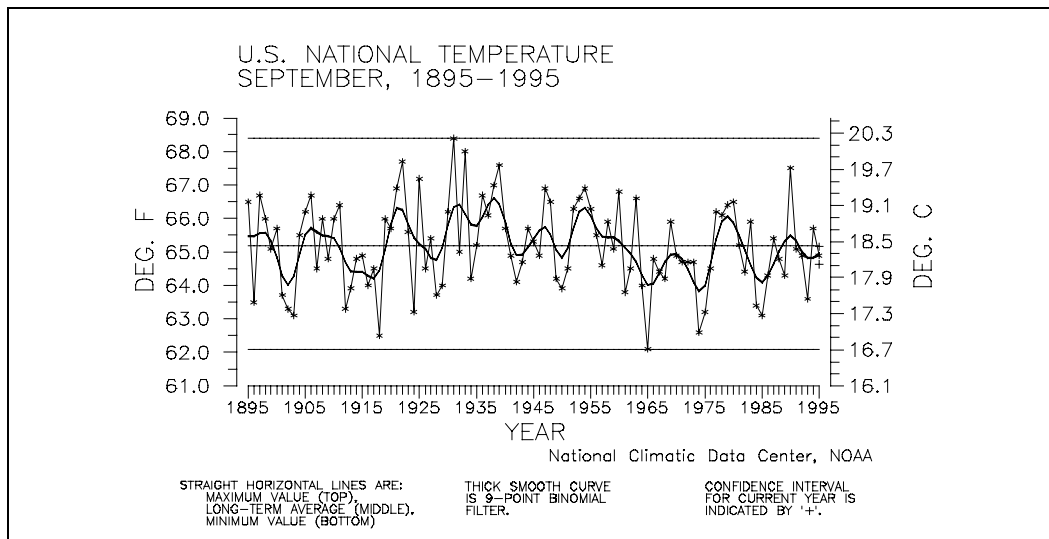


# CLIMATE VARIATIONS BULLETIN



This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Analysis Center, and preliminary tornado statistics obtained from the NWS National Severe Storms Forecast Center. **THE CURRENT DATA SHOULD BE USED WITH CAUTION.** These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), the hurricane datasets (TD-9636 and TD-9697), the tornado dataset (STORM DATA), and the monthly station dataset (LCD supplemental files). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

The narrative, tables, and graphs in the CVB are also available via automated facsimile. The previous month's summary can be obtained after the tenth of the month by dialing 704-271-4570 and selecting the appropriate menu codes. A touch-tone fax machine is required.

If you have access to the Internet, copies of the CVB are available via both the NCDC's World Wide Web (WWW) server and the NCDC's anonymous FTP server.

NCDC's WWW server

URL for the CVB: <http://www.ncdc.noaa.gov/publications/cvb/cvb.html>

NCDC's anonymous FTP server

Machine: <ftp.ncdc.noaa.gov>

Directory: [/pub/data/cvb](ftp://ftp.ncdc.noaa.gov/pub/data/cvb)

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 704-271-4994 or fax a letter to 704-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 704-271-4800 or sending a fax to 704-271-4876 or by writing to:

National Climatic Data Center, NOAA  
Federal Building  
151 Patton Avenue, Room 120  
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

# UNITED STATES SEPTEMBER CLIMATE IN HISTORICAL PERSPECTIVE

William O. Brown  
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Global Climate Lab, Global Analysis Branch  
Federal Building  
Asheville, NC 28801 USA

Preliminary data for September 1995 indicate that temperature averaged across the contiguous United States was below the long-term mean (see Figure 1). September 1995, with an averaged temperature of 64.9° (F), ranked as the 44th coolest September since national records began in 1895. The 1995 value is based on preliminary data, which has been shown to be within 0.26°F (0.14°C) of the final data over a 46-month period. This confidence interval is indicated in the figure by '+'. The darker smooth curve is a nine-point binomial filter that averages out the year-to-year fluctuations and shows the longer-term variations. Roughly seven percent of the country averaged much cooler than normal while an additional seven percent of the country averaged much warmer than normal for September 1995.

With an areally-averaged national precipitation value of 1.92 inches, September 1995 was the 13th driest September on record. The preliminary value for precipitation is estimated to be accurate to within 0.14 inches (3.56 millimeters) and the confidence interval is plotted in Figure 2 as a '+'. Nearly a fifth (19.4%) of the country experienced much drier than normal conditions while only four percent was much wetter than normal.

Historical precipitation is shown in a different way in Figure 3. The September precipitation for each climate division in the contiguous U.S. was first standardized using the gamma distribution over the 1931-90 period. These gamma-standardized values were then weighted by area and averaged to determine a national standardized precipitation value. These national weighted values were then normalized over their period of record. Negative values are drier and positive values are wetter than the mean. This index gives a more accurate indication of how precipitation across the country compares to the local normal (60-year average) climate. The national standardized precipitation ranked September 1995 as the 13th driest such month on record.

In order to show more of a historical perspective, the precipitation and temperature rankings for the periods September 1995, August-September 1995, April-September 1995, and October 1994-September 1995 for the nine climatically homogeneous regions, as well as the national rankings, are listed in Table 1.

The regional rankings for temperature for the month of September quickly indicate that temperatures were warmer than normal from the Rockies westward and cooler than normal east of the Mississippi River and in the southern Plains. September 1995 was the 13th warmest such month for the Northwest region and marked the ninth consecutive September with temperatures, at to much above, normal (Figure 14). September 1995 was the 18th warmest such month for the West region. Further east, the Central region had the 17th coolest September since 1895 (Figure 13), marking the fourth consecutive September with much cooler than normal temperatures. The Northeast region had the 19th coolest September since records began. For the two-month period, August-September, overall warmth was the general rule, with every region of the country within the warm half of the historical distribution.

September 1995 was the seventh driest such month on record for the Central region (Figure 11) and the ninth driest for the West region. Only the Southwest (48th wettest, Figure 12) and Northwest (50th wettest) regions were within the wet half of the historical distribution. September 1995 continued the trend of much drier than normal conditions for the Northeast region. For each of the noted periods (twelve month, six month and two-month), the Northeast region experienced the driest such period on record.

National averaged temperature for the nine month period January-September for 1895-1995 is shown in Figure 4. The January-September 1995 temperature was above the long-term mean ranking as the 16th warmest such period since 1895. Seven of the last ten such January through September periods have had

temperatures above to much-above the long-term mean. For the year-to-date, none of the country has averaged much cooler than normal while nearly eight percent of the country has averaged much warmer than normal.

Figure 5 shows the historical January-September national averaged precipitation. The year-to-date for 1995 was the 14th wettest such nine-month period since records began. Six of the last seven January-September periods averaged above to much above normal. For the year-to-date, six percent of the country has averaged much drier than normal while over fourteen percent of the country has averaged much wetter than normal. When the local normal climate is taken into account, January-September 1995 ranked as the 20th wettest such period since 1895 (Figure 6).

Figure 7A shows, in illustrative map form, the September 1995 temperature rankings for the 48 contiguous states. Only one state, Maine, was within the top ten coolest category (at seventh coolest) of the historical distribution for the month of September while an additional 24 states were within the cool third of the distribution. It was the seventh warmest September on record for Washington and the eighth warmest for Arizona, the only two states within the top ten warmest category of the distribution. Eight other states were within the warm third of the historical distribution.

September 1995 state ranks for precipitation are shown in Figure 7B. It was the driest September on record for Nevada, the fourth driest September on record for Indiana, fifth driest for Illinois and Missouri, and sixth driest for Ohio. Eighteen other states were within the dry third of the historical distribution. No states were within the top ten wet portion of the distribution while only four were within the wet third of the historical distribution. It must be stressed that, when the final values for precipitation are calculated, these ranks *WILL* change due to the use of a denser station network. ***It should also be noted that the September state precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.***

State temperature and precipitation ranks for the nine-month period, January-September 1995, are shown in map form in Figures 8A and 8B. Only Maryland (ninth warmest) was within the top ten warm category while an additional 29 states were within the warm third of the distribution. No states were within the cool third of the historical distribution (Figure 8A).

It was the wettest year-to-date for Idaho, second wettest for California, fourth wettest for Nevada, sixth wettest for Colorado and Oregon, seventh wettest for Utah and eighth wettest for South Dakota. Thirteen other states were within the wet third of the distribution for the year-to-date. January-September 1995 was the second driest such period for New York and Vermont, third driest for Pennsylvania and New Jersey, fifth driest for New Hampshire, seventh driest for Massachusetts and Delaware, eighth driest for Maryland, and ninth driest for Maine (Figure 8B). Nine other states were within the dry third of the distribution.

There was a slight increase in the percent area of the country experiencing severe to extreme drought while the portion of the country dominated by severe to extreme wetness fell nearly five percent. Nationally, long-term drought conditions (as defined by the Palmer Drought Index) for September 1995 increased to 4.7% of the country while the percent coverage of severe to extreme wet area fell to about a fifth of the country (Figure 9). Table 2 lists the precipitation ranks and statistics for selected river basins for the 1994-1995 Hydrologic Year. The core wet areas included the northern and central Great Plains, Oklahoma, northern and central high Plains, the northern and central Rockies, the Great Basin, the interior Northwest and California. The Palmer dry areas included the Northeast region and parts of the southern High Plains, mid-Atlantic, interior Southeast, and lower and mid Mississippi valley regions.

Table 3 shows extremes, 1961-90 normals, and the September 1995 values for both precipitation and temperature for the nine regions and the contiguous U.S.

Precipitation averaged across the Primary Corn and Soybean Belt was above normal for the seven-month growing season to date (Figure 10). The last seven March-September periods have averaged at, to much wetter than, the long-term mean.

According to preliminary data from the National Weather Service's National Severe Storms Forecast Center, there were 30 tornadoes across the contiguous United States in September 1995. The 1953-1994 average tornado count for September is 40. Extremes for September include a minimum of 5 tornadoes in 1953 and a maximum of 139 in 1967. For the year-to-date, 1082 tornadoes have occurred. The January-September long-term average is 726. The year-to-date extremes are 1099 in 1992 and 382 in 1953. It should be noted that the preliminary tornado count is generally higher than the final count and that observations have generally improved with time.

TABLE 1. PRECIPITATION AND TEMPERATURE RANKS, BASED  
ON THE PERIOD 1895-1995. 1 = DRIEST/COLDEST,  
101 = WETTEST/WARMEST FOR SEPTEMBER 1995,  
101 = WETTEST/WARMEST FOR AUG-SEP 1995,  
101 = WETTEST/WARMEST FOR APR-SEP 1995,  
100 = WETTEST/WARMEST FOR OCT 1994-SEP 1995.

REGION	SEP 1995	AUG-SEP 1995	APR-SEP 1995	OCT 1994- SEP 1995
-----	----	-----	-----	-----
PRECIPITATION:				
NORTHEAST	18	1	1	1
EAST NORTH CENTRAL	31	64	61	57
CENTRAL	7	13	72	47
SOUTHEAST	32	34	43	59
WEST NORTH CENTRAL	41	28	87	96
SOUTH	42	34	72	75
SOUTHWEST	54	16	59	82
NORTHWEST	52	58	92	79
WEST	9	16	92	99
NATIONAL	13	10	75	86
TEMPERATURE:				
NORTHEAST	19	64	55	91
EAST NORTH CENTRAL	21	76	56	93
CENTRAL	17	77	55	88
SOUTHEAST	38	67	64	85
WEST NORTH CENTRAL	50	72	25	69
SOUTH	30	64	32	79
SOUTHWEST	65	97	30	77
NORTHWEST	89	60	52	77
WEST	84	91	34	55
NATIONAL	44	90	36	90

TABLE 2.

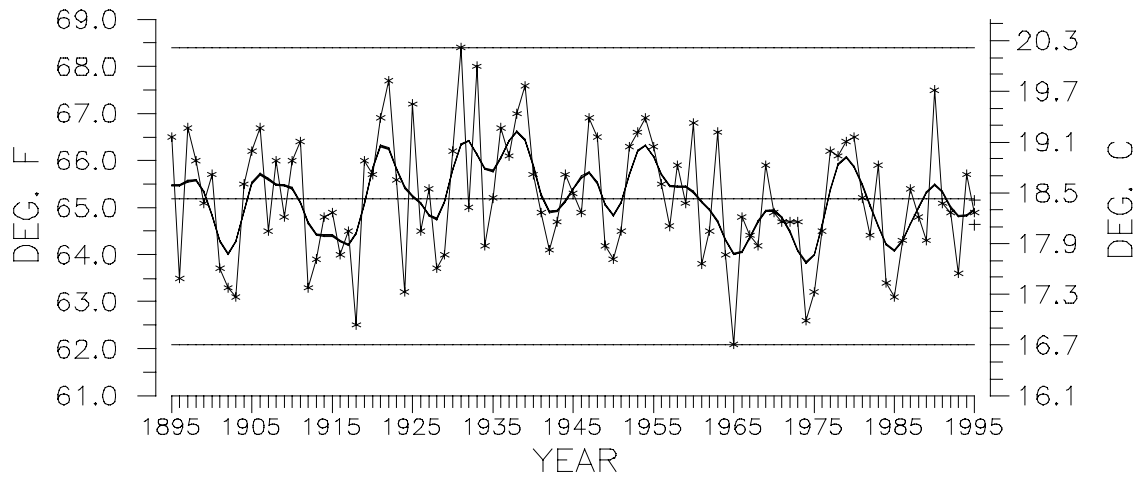
STATISTICS FOR SELECTED RIVER BASINS: PRECIPITATION RANKING FOR OCT-SEP 1994-95, WHERE RANK OF 1 = DRIEST, 100 = WETTEST, BASED ON THE PERIOD 1895 TO 1995, AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF SEPTEMBER 1995. RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN -----	PRECIPITATION RANK -----	% AREA DRY -----	% AREA WET -----
MISSOURI BASIN	98	.0%	45.1%
PACIFIC NORTHWEST BASIN	94	.0%	36.6%
CALIFORNIA RIVER BASIN	98	.0%	62.4%
GREAT BASIN	98	.0%	74.0%
UPPER COLORADO BASIN	86	.0%	6.6%
LOWER COLORADO BASIN	78	10.4%	.0%
RIO GRANDE BASIN	53	12.7%	3.9%
ARKANSAS-WHITE-RED BASIN	88	.0%	39.2%
TEXAS GULF COAST BASIN	91	.0%	.0%
SOURIS-RED-RAINY BASIN	89	.0%	48.8%
UPPER MISSISSIPPI BASIN	80	.0%	17.9%
LOWER MISSISSIPPI BASIN	54	.0%	.0%
GREAT LAKES BASIN	18	2.8%	.0%
OHIO RIVER BASIN	32	14.2%	.0%
TENNESSEE RIVER BASIN	36	.0%	.0%
NEW ENGLAND BASIN	4	34.6%	.0%
MID-ATLANTIC BASIN	3	40.8%	.0%
SOUTH ATLANTIC-GULF BASIN	72	2.6%	8.3%

TABLE 3. EXTREMES, 1961-90 NORMALS, AND 1995 VALUES  
FOR SEPTEMBER

REGION	PRECIPITATION (INCHES)					
	DRIEST		WETTEST		NORMAL	1995
	VALUE	YEAR	VALUE	YEAR	PCPN	PCPN
-----	-----	-----	-----	-----	-----	-----
NORTHEAST	1.25	1914	6.68	1938	3.63	2.36
EAST NORTH CENTRAL	.95	1952	7.21	1986	3.60	2.73
CENTRAL	.70	1897	6.94	1926	3.63	1.63
SOUTHEAST	1.91	1919	9.26	1979	4.33	3.53
WEST NORTH CENTRAL	.47	1952	3.42	1973	1.61	1.27
SOUTH	.88	1956	6.88	1913	3.67	2.89
SOUTHWEST	.09	1956	3.07	1941	1.46	1.34
NORTHWEST	.12	1975	3.42	1959	1.33	1.16
WEST	.03	1974	2.00	1976	.62	.08
NATIONAL	1.45	1956	3.57	1986	2.63	1.92
REGION	TEMPERATURE (DEGREES F)					
	COLDEST		WARMEST		NORMAL	1995
	VALUE	YEAR	VALUE	YEAR	TEMP	TEMP
-----	-----	-----	-----	-----	-----	-----
NORTHEAST	56.2	1918	66.5	1961	59.8	58.5
EAST NORTH CENTRAL	53.5	1918	65.6	1931	58.8	57.5
CENTRAL	60.5	1918	73.6	1925	66.7	64.9
SOUTHEAST	68.9	1967	80.3	1925	73.2	72.9
WEST NORTH CENTRAL	47.4	1965	62.7	1897	56.8	57.1
SOUTH	67.7	1974	79.5	1911	73.6	73.3
SOUTHWEST	59.0	1912	67.3	1983	63.9	65.0
NORTHWEST	52.7	1926	62.7	1990	57.3	60.1
WEST	61.0	1986	69.9	1979	65.9	68.3
NATIONAL	62.1	1965	68.4	1931	64.8	64.9

# U.S. NATIONAL TEMPERATURE SEPTEMBER, 1895-1995



National Climatic Data Center, NOAA

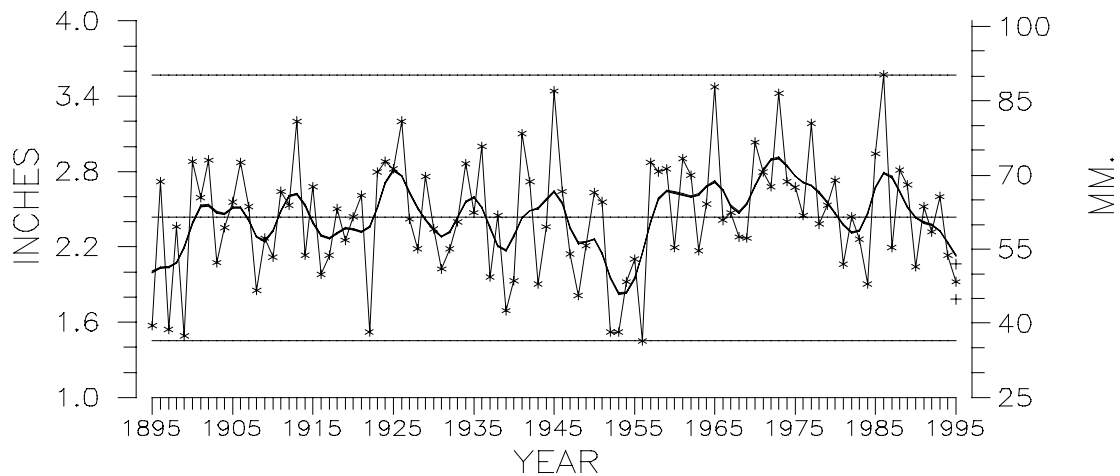
STRAIGHT HORIZONTAL LINES ARE:  
MAXIMUM VALUE (TOP),  
LONG-TERM AVERAGE (MIDDLE),  
MINIMUM VALUE (BOTTOM)

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

CONFIDENCE INTERVAL  
FOR CURRENT YEAR IS  
INDICATED BY '+'.  
+

**Figure 1**

# U.S. NATIONAL PRECIPITATION SEPTEMBER, 1895-1995



National Climatic Data Center, NOAA

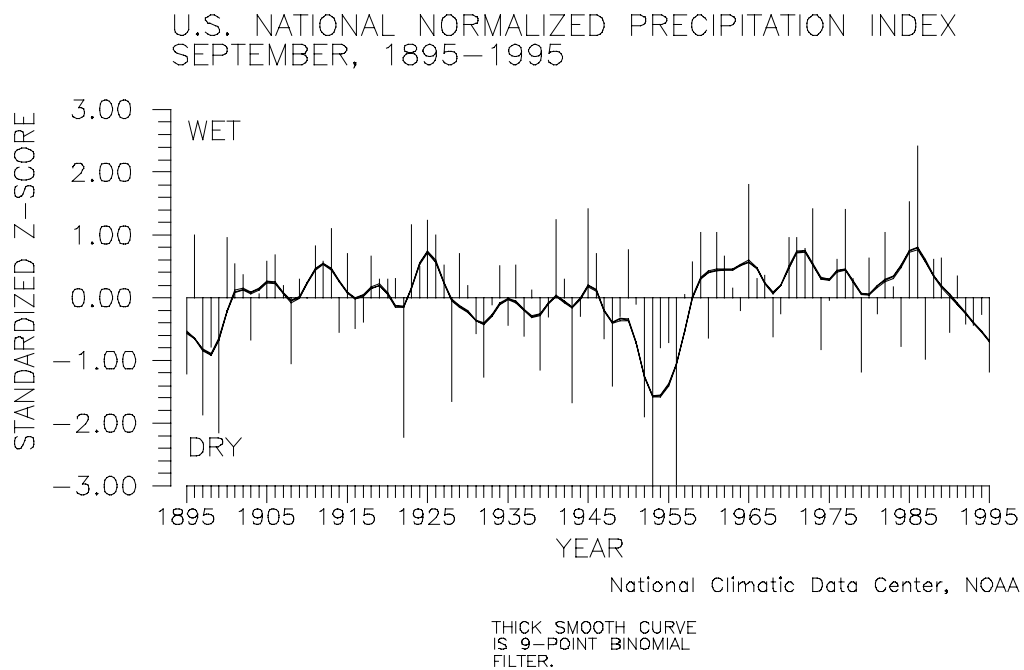
STRAIGHT HORIZONTAL LINES ARE:  
MAXIMUM VALUE (TOP),  
LONG-TERM AVERAGE (MIDDLE),  
MINIMUM VALUE (BOTTOM)

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

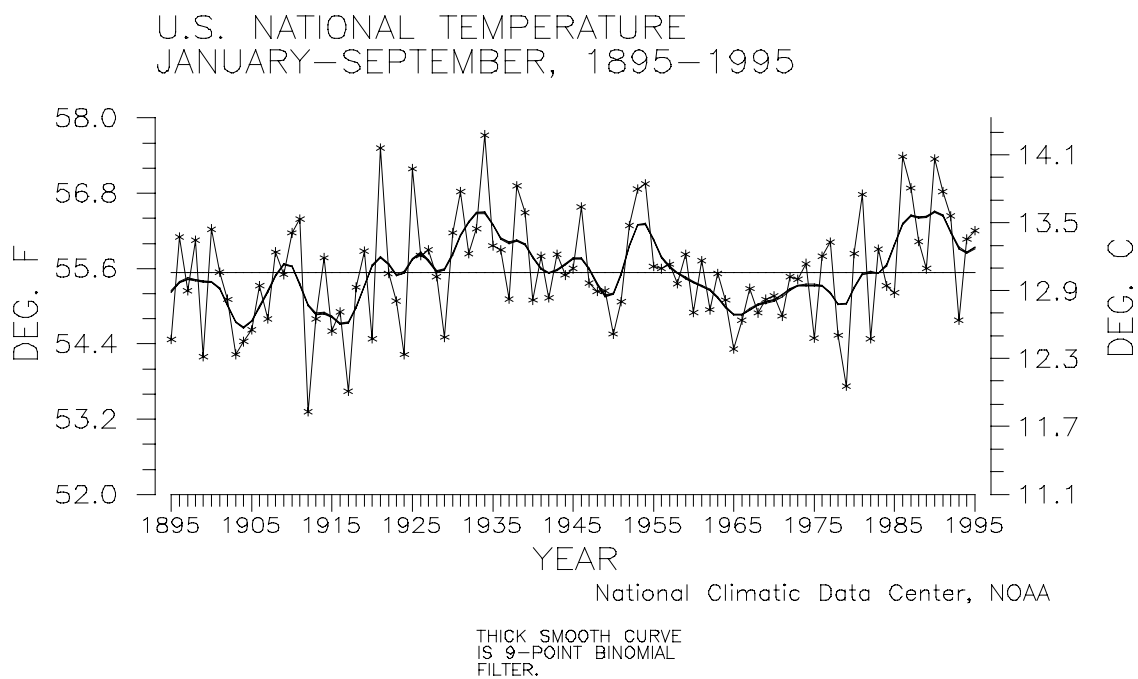
CONFIDENCE INTERVAL  
FOR CURRENT YEAR IS  
INDICATED BY '+'.  
+

**Figure 2**



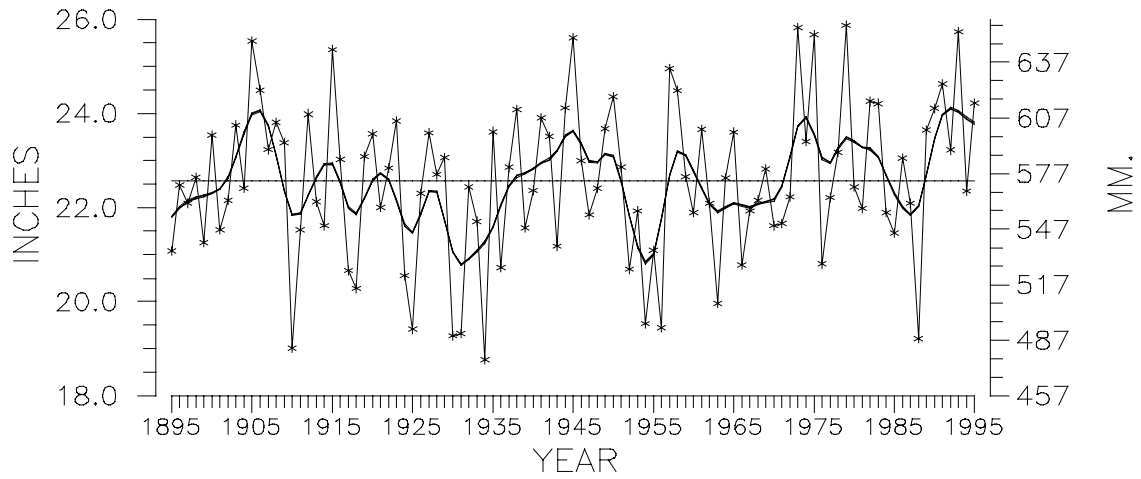


**Figure 3**



**Figure 4**

# U.S. NATIONAL PRECIPITATION JANUARY–SEPTEMBER, 1895–1995

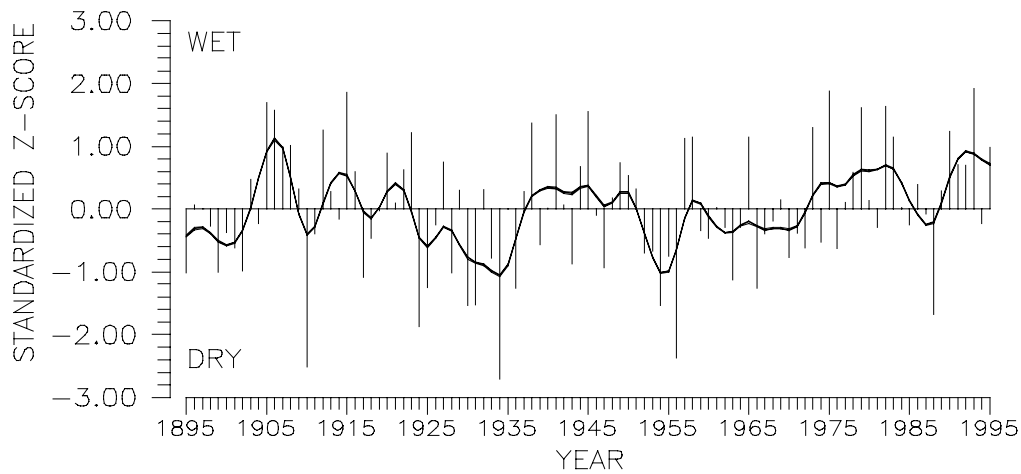


National Climatic Data Center, NOAA

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 5**

# U.S. NATIONAL NORMALIZED PRECIPITATION INDEX JANUARY–SEPTEMBER, 1895–1995

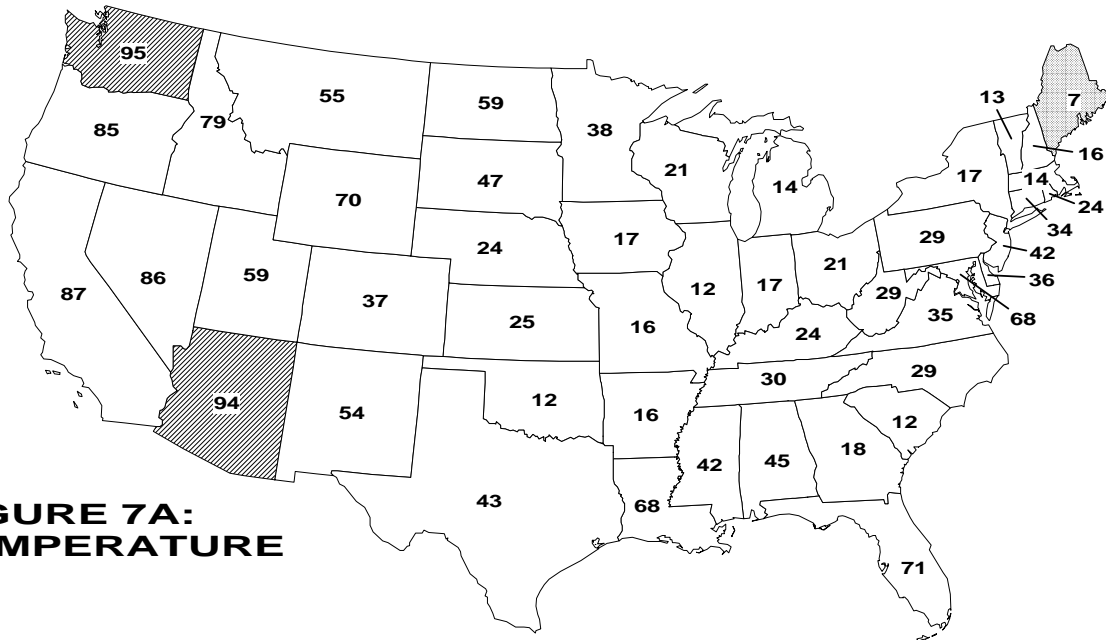


National Climatic Data Center, NOAA

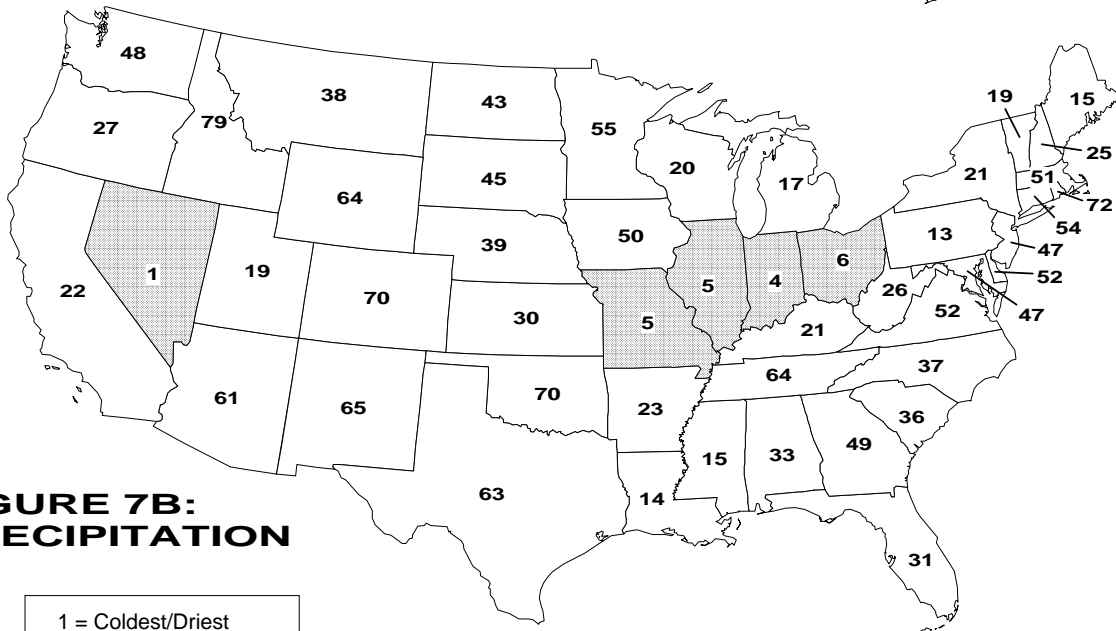
THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 6**

# SEPTEMBER 1995 STATEWIDE RANKS



**FIGURE 7A:  
TEMPERATURE**



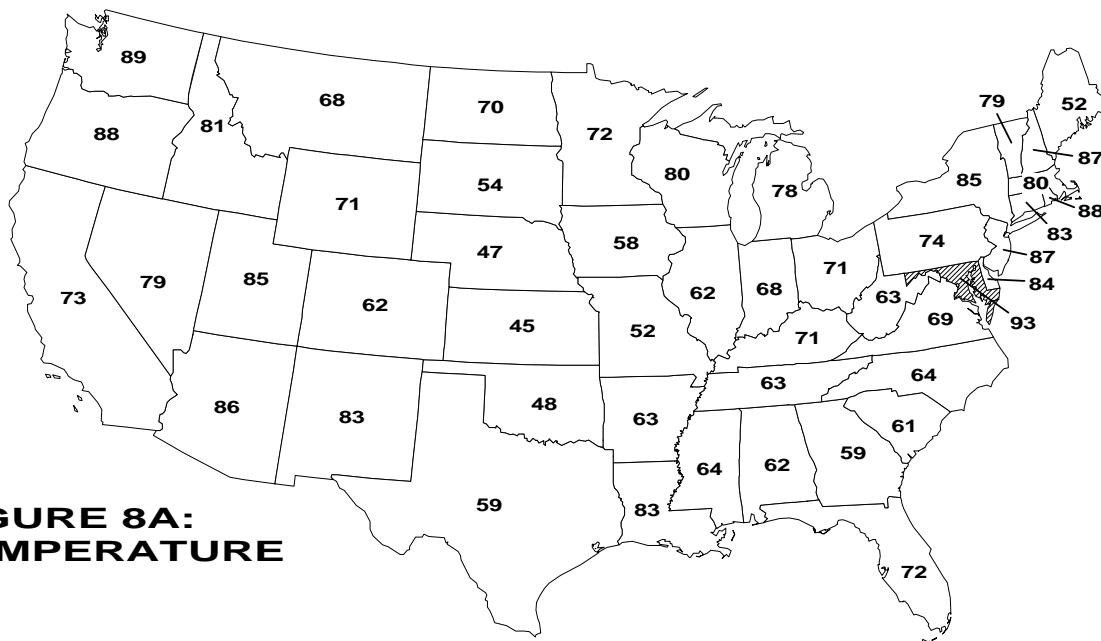
**FIGURE 7B:  
PRECIPITATION**

1 = Coldest/Driest  
101 = Warmest/Wettest

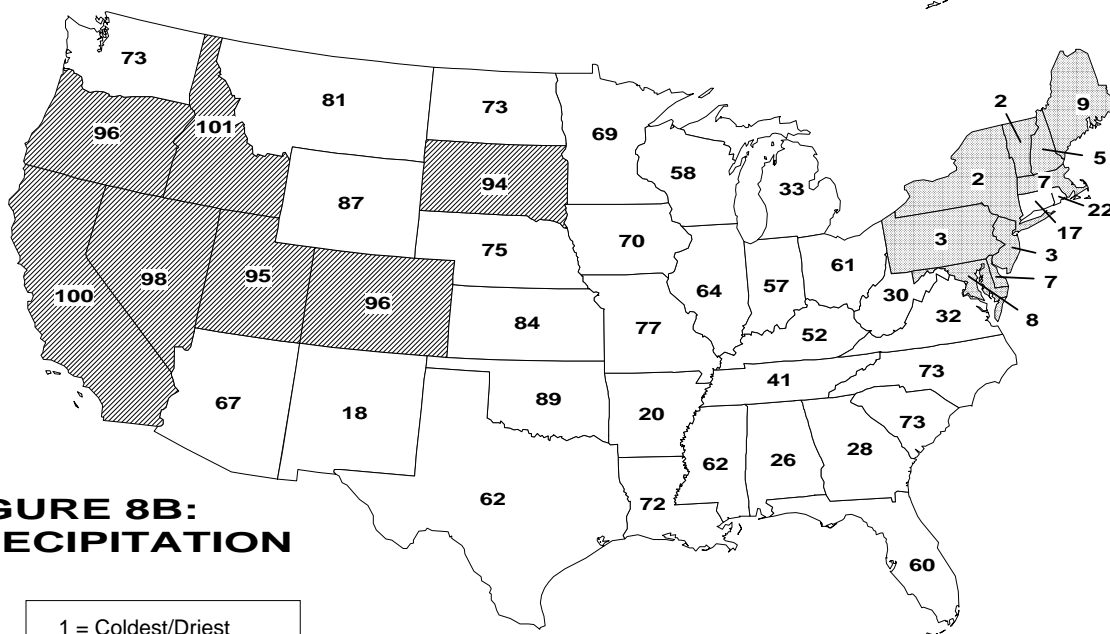
National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1995. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 92-101) are shaded.

# JAN-SEP 1995 STATEWIDE RANKS



**FIGURE 8A:  
TEMPERATURE**



**FIGURE 8B:  
PRECIPITATION**

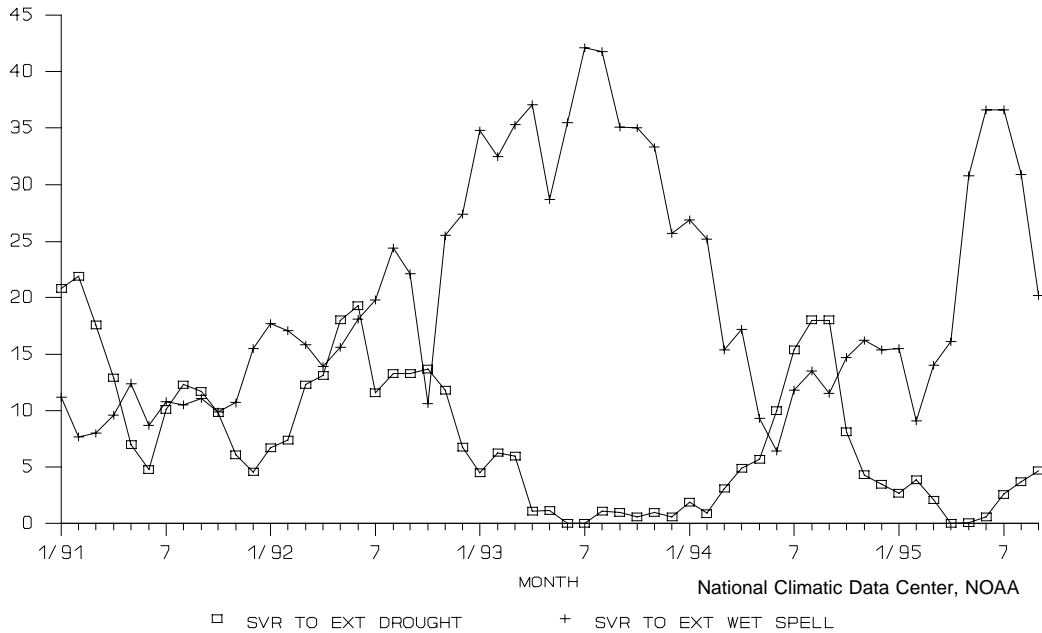
1 = Coldest/Driest  
101 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1995. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 92-101) are shaded.

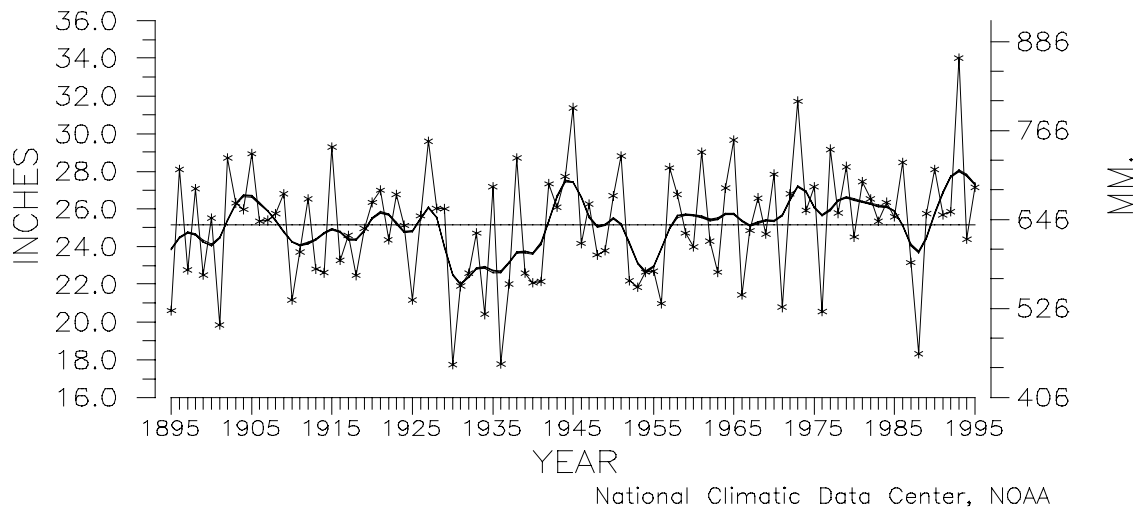
# U.S. PERCENT AREA DRY AND WET

JANUARY 1991 THROUGH SEPTEMBER 1995



**Figure 9**

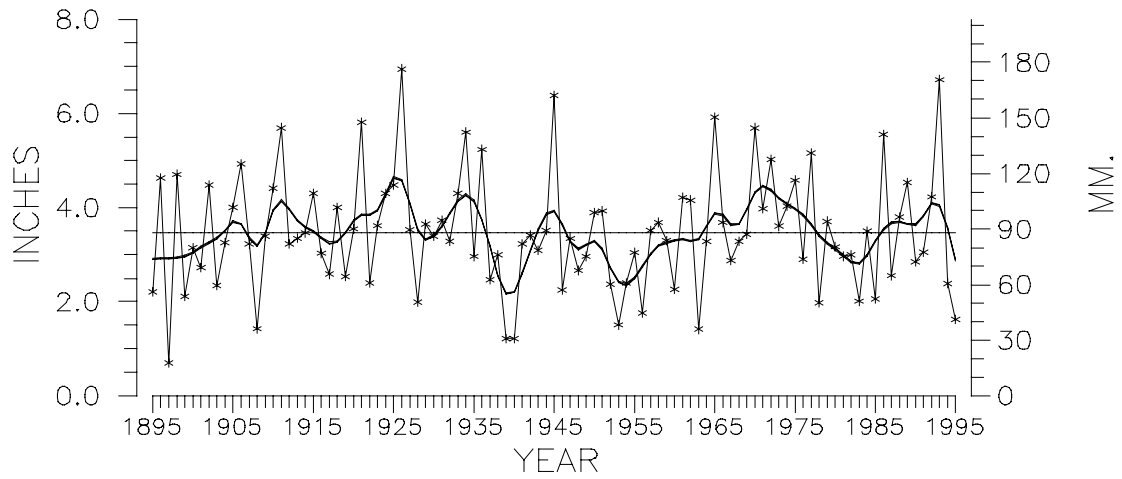
## PRIMARY CORN AND SOYBEAN BELT PRECIPITATION MARCH–SEPTEMBER, 1895–1995



THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 10**

# CENTRAL REGION PRECIPITATION SEPTEMBER, 1895–1995

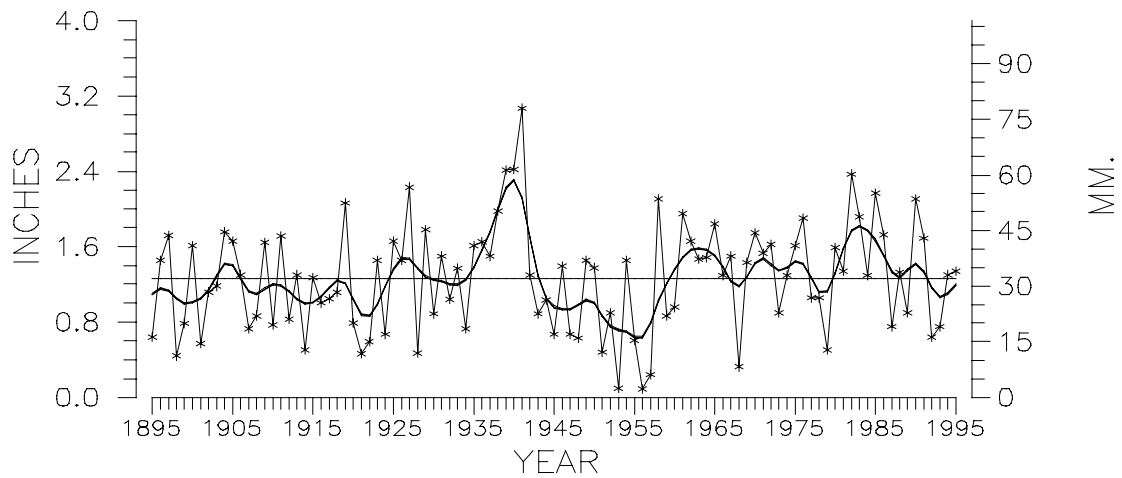


National Climatic Data Center, NOAA

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 11**

# SOUTHWEST REGION PRECIPITATION SEPTEMBER, 1895–1995

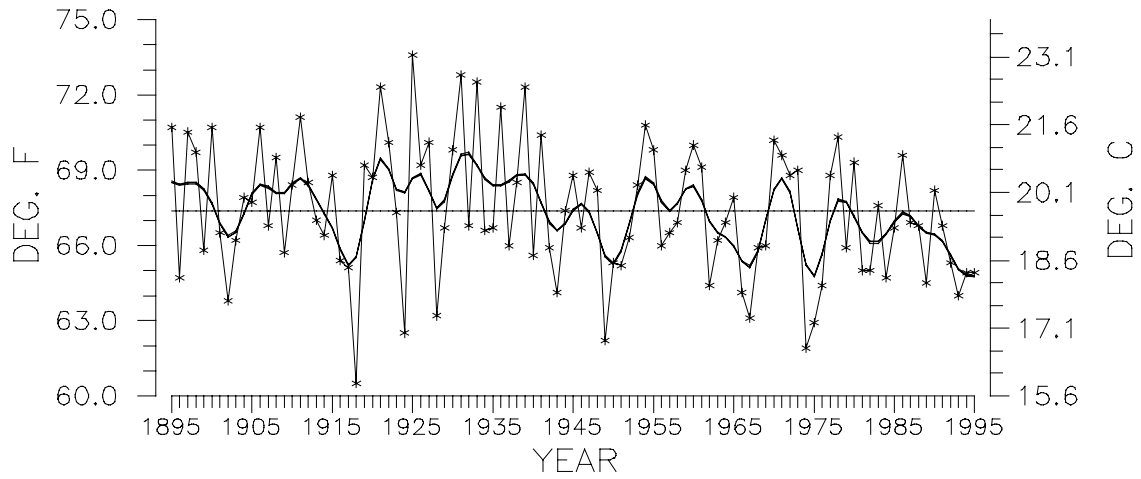


National Climatic Data Center, NOAA

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 12**

# CENTRAL REGION TEMPERATURE SEPTEMBER, 1895-1995

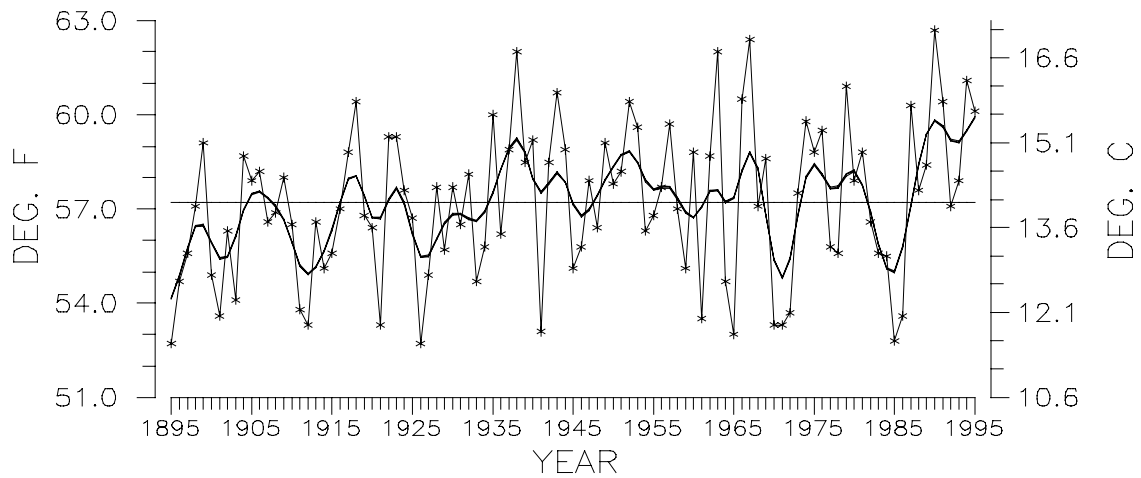


National Climatic Data Center, NOAA

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 13**

# NORTHWEST REGION TEMPERATURE SEPTEMBER, 1895-1995



National Climatic Data Center, NOAA

THICK SMOOTH CURVE  
IS 9-POINT BINOMIAL  
FILTER.

**Figure 14**